

IN THE SPECIFICATION:

Please replace the paragraph beginning on page 5, line 19, with the following new paragraph:

--(1) As shown in Fig. 56, the steady-state bias value not only changes depending on the position of the head, but that bias value also differs, even for the same track, depending on the where the head was located in the past. In other words, as shown in Fig. 56, it has ~~hysterisis~~ hysteresis characteristics. Therefore, in the prior method of using a bias table of average bias values, the shift in bias values is large. For example, for a 2.5-inch HDD, there is 1 to 3 mA error. Since this error cannot be estimated in advance, correction is not possible. Therefore, in a feedback control system in settling control, there must be time to correct this shift in bias value, and so there is the problem of not being able to shorten the settling time.--

Please replace the paragraph beginning on page 78, line 14, with the following new paragraph:

--(11) During ~~coarse~~ coarse control, it is possible to estimate the bias value in real time, and estimate the real position and real velocity, and according to those values, switch from ~~coarse~~ coarse control to settling control. The real velocity is estimated instead of the observer estimated position, and control is switched to settling control at that velocity. This makes it possible to avoid moving in the reverse direction, the velocity becoming 0, or never coming close to the target position.--